

*Specific names of individuals and institutions are blacked out to preserve applicant confidentiality where possible.*

**Title:** Training Program in Stem Cell Research at [REDACTED]

### **Proposal Abstract as Submitted by Applicant**

Stem cell research holds great promise for developing cell-based therapies for common diseases. Scientists at [REDACTED] have contributed new insights that have enhanced our understanding of stem cell biology, including identification of neural stem cells, derivation and characterization of greatly-improved human embryonic stem cell lines, and application of innovative islet transplantation methods to treat diabetes. These discoveries highlight the need for scientists who can bridge basic and clinical sciences to fully realize the clinical potential of stem cells. The goal of the [REDACTED] Training Program in Stem Cell Research is to train CIRM scholars in basic research who are cognizant of clinical needs, as well as scholars in clinical disciplines who are grounded in the basic science of stem cell research. We will achieve this long-term goal by: (1) capitalizing on our strong, multidisciplinary faculty engaged in stem cell-related research to provide training in neural stem cells, cardiac repair and regeneration, angiogenesis, diabetes, developmental biology, hematopoiesis and cancer stem cells, mesenchymal biology, bioengineering, and human embryonic stem cells; (2) exploiting our world-class graduate programs to recruit talented pre-doctoral students to stem cell research; (3) attracting top PhD and MD/PhD graduates to postdoctoral careers in stem cell research at [REDACTED]; (4) providing a mechanism for outstanding clinical fellows to obtain rigorous training in basic stem cell research. This program will include three major training components: (1) didactic coursework in developmental and stem cell biology, embryology, human disease and transplantation; (2) training in the rigorous ethics required to address difficult questions surrounding stem cell research and regenerative medicine; and (3) a mentored research program under the guidance of leading basic science and/or clinical stem cell investigators as preparation for a career aimed toward treating human diseases. Training will occur in an environment enriched by opportunities to present research, attend journal clubs and retreats and learn from outstanding scientists through formal seminars. We will also extend our courses and training to those who attend neighboring institutions in order to drive stem cell research forward and train the next generation of stem cell scientists, clinicians and technicians.

### **Benefit of this Program to California**

This program will benefit the people and the state of California by providing high-quality training in the scientific, clinical, social, and ethical aspects of stem-cell research to the scientists and clinicians who will develop and apply future therapies in this rapidly emerging field.

### **Summary of Review**

This type I proposal seeks to develop an integrated training program in stem cell research to train pre-doctoral and post-doctoral scholars in basic research (with mindfulness to

clinical need), and clinical scholars who can translate the potential of stem cells. The training program builds on a long-standing, strong base of stem cell research at this institution, which was one of the first to study human embryonic stem cells (hESCs). The core curriculum is intense, but tested. The training program impressively has a series of didactic course programs in developmental stem cell biology; hESC labs; regenerative medicine; and ethical, legal, and social issues. The program has a strong commitment from the institution, an administrative structure supported by a well-defined plan for selecting candidates, and evaluating their progress during the course of participation. It also includes a collaborative program with other institutions. Two experienced investigators who are experts in basic stem cell biology as well as clinical aspects of the field will run the program. Because the proposed program is integrated into a large, established training program, the supporting administrative structure already exists. The scientific faculty and history of mentoring at this institution are superb. The faculty has extensive background in both basic and clinical aspects of stem cell biology. All aspects of basic stem cell developmental biology and many direct translational programs for cell-based therapies are covered by the mentors' laboratories. The quality of the applicant pool and existing training programs are outstanding. This is one of the strongest stem cell research institutions in the country.

### **Overall Strengths and Weaknesses**

Overall, this is an extremely well-organized program with outstanding leadership capabilities, faculty resources, history of training programs, and most importantly, a well defined program of courses and mentoring. This is one of the best opportunities to begin a stem cell biology program in the state of California.

### **Recommendations**

Highly meritorious and recommended for funding.

	Pre	Post	Clinical	Total
Fellows Requested:	6	6	4	16
Fellows Recommended:	6	6	4	16

	Year 1	Total
Budget Requested:	\$ 1,184,875	\$ 3,620,652
Budget Recommended:	\$ 1,184,875	\$ 3,620,652